

REMARKS

Claims 1 and 4-20 are pending.

Claim 1 is amended.

Claims 1 and 4-20 are rejected.

Amended Claim 1

Claim 1 is amended to include "and" between component a) and b).

CF₃ is deleted from the definitions of R₁ and R₃.

No new matter has been added.

Restriction

The restriction/election requirement is withdrawn in view of last amendment.

Specification

Applicants have enclosed a replacement abstract on a separate sheet of paper, apart from any other text.

35 USC 103(a)

Claims 1, 4-15, 17, 19 and 20 are rejected under 35 USC 103(a) as being unpatentable over Lent, US 5,837,042 in view of Goulle, WO 96/20942.

Claims 1, 4-13 and 16-20 are rejected under 35 USC 103(a) as being unpatentable over Jalon, US 4,891,505 in view of Goulle, WO 96/20942.

D1 WO96/20942

D2 US 5,837,042

D3 US 4,891,505

D4 US 4, 655,788 (not cited by the examiner)

The present invention pertains to a process for the preparation of luminescent polymeric fibres, wherein the fibres are treated with a composition comprising

- (a) one or more luminescent lanthanide chelates containing three organic anionic ligands having at least one UV absorbing group and component (a) is a compound of formula II, III or IV and
- (b) one or more solvents.

WO 96/20942 (D1) pertains to luminescent lanthanide complexes which are encompassed by compounds of formula II as defined in the present invention. Goulle points out that lanthanide complexes display bright triboluminescence (p. 1, paragraph 5). However, Goulle is completely silent about the brightness of the luminescent lanthanide complexes in comparison to other luminescent lanthanide complexes.[n=3]

US 5,837,042 (D2) pertains to an ink jet composition comprising a colorant and an ink carrier whereby the colorant comprises a rare earth metal and a chelating ligand, preferably lanthanide chelates. D2 is silent about the ratio of chelating ligand to rare earth metal. Lent gives Lumilux CTM as examples of such colorants but the structures thereof are not given and cannot be found in the Color Index nor in Chemical Abstracts registry file.

US 4,891,505 (D3) pertains to a process for security-marking of articles (documents, identity cards, bills, etc.) by dyeing with a mixture of at least two lanthanide chelates.

Specific information about suitable chelate complexes can only be found in the working examples. In example 1, 4 moles of benzoyl trifluoroactone and 4 moles of dimethyl amine are reacted with 1 mole of lanthanide chloride (0.9 mole TeCl₃ + 0.1 mole EuCl₃), i.e. chelates are formed, whereby 4 diketone ligands are bound to the lanthanide atom. In examples 2-6, other diketones and other lanthanides compounds are used. The molar ratio diketone/lanthanide is 4:1 in all examples.

US 4,655,788 (D4), not cited by the examiner, pertains to the fabrication of luminescent security fibres threads, textile materials, plastic and cellulose films and plastic resins and their application in documents, identity cards, bills, etc. The fibres are immersed in a liquid bath comprising a luminescent rare-earth chelate, a solvent for the rare-earth chelate and a diluent in which the rare-earth chelate is not soluble. The solvent is at least partly removed and the textile material dyed with the luminescent rare-earth chelate is withdrawn from the bath and dried.

US 4,655,788 does not disclose any specific information about the structure of the luminescent chelate compounds. The description mentions rare-earth chelates, whereby such suitable chelates are yttrium or thorium chelate (column 2, line 52). In example 1, dimethylamine terbium benzoyl-trifluoroacetate is used. The stoichiometry of the chelate complex, i.e. the ratio of amine/lanthanide/diketone is not disclosed. The synthesis of chelate complexes is not described and there is no hint about any commercially available product.

D1-D4 all discuss lanthanide chelates but make no distinctions as to the strength of fluorescence under UV radiation. Thus D1-D4 consider the lanthanide chelates equivalent in this respect.

In example 3, the chelate complex is produced in situ during the dyeing process. This example is not workable for a person skilled in the art as the required amounts and concentrations of the reactants are omitted.

In contrast to D2, D3 and D4, D1 does not give any particulars about treating substrates so D1 cannot be considered as the nearest state of the art. D4 is to be considered to be the nearest state of the art as it pertains to the treatment of fibres.

For a comparison between the presently claimed process and D4, fluorescence properties of polyester material containing compound (XV) of the present patent application and example 1 of D4 are compared. D4 does not disclose the exact stoichiometry; therefore the structurally closest compound is synthesised, namely the complex with three anionic ligands ($n = 3$). State of the art structure II of the declaration is structurally more closely related to the present invention than the compound of example 1 of D3, which contains four anionic ligands ($n=4$). Moreover, state of the art structure II of the declaration is encompassed by colorant comprising a rare earth metal and a chelating ligand as in D2.

Consequently, the state of the art structure II of the declaration is representative for the state of the art D2-D4.

The results of the enclosed test report shows that fibres treated with the process of the invention (structure III of the declaration) exhibit a considerable stronger fluorescence under UV radiation than fibres treated with the state of the art analogous compound (structure II of the declaration). A person skilled in the art could not have expected such an improvement as the skilled artisan considered the

lanthanide chelates as of D1-D4 as equivalent prior to the conception of the present invention. So this improvement is a surprising finding.

Consequently, the presently claimed subject matter non-obvious in view of the prior art.

The Applicants respectfully request reconsideration and withdrawal of the rejections in light of the amendments, remarks and 1.132 declaration.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



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Enclosure: Petition for one (1) month extension of time, Declaration under 1.132 and replacement abstract.